

REMARKS

Upon entry of the present amendment, claims 1, 6 and 23 have been amended and claims 1-4, 6-9, 23-26 and claims 28-40 are pending. Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned "Version with Markings to Show Changes Made".

The Invention

The present invention as claimed provides stable aqueous dispersions of alkyd or epoxy ester polymers, polyester modified alkyds, SSIPA based alkyds, styrene modified alkyd, and acrylic modified alkyds that are substantially free of emulsifiers (emulsifiers may adversely affect coating properties) and have low acid value polymers (low acid values will not adversely affect coating properties as compared to high acid values). Hence, the composition of the invention uniquely provides:

- acid values of the polymer of as low as 4 to about 70;
- an aqueous dispersion (as opposed to a solution) with low VOCs because the dispersion has less than about 2 weight percent organic solvent; and
- a stable aqueous dispersion substantially free of emulsifiers with polymers having a small particle size (less than 300 nm) for stability and coating properties.

The Art And The Rejection

None of the cited references describe or suggest a stable aqueous dispersion that includes

- the resins as now claimed,
- no emulsifier, and
- low acid values.

U.S. Patent No. 5,449,707

In U.S. Patent No. 5,449,707, Higashimura et al. does not use alkyds or epoxy modified polymers, polyester modified alkyds, SSIPA-based alkyds, styrene modified alkyds or acrylic modified alkyds in their dispersions. In '707, the polyester described has been copolymerized with an unsaturated monomer yielding hydrophilic group. The amended claims reflect the use of the above resins with isocyanates.

Conclusion

In view of the foregoing, applicants respectfully request reconsideration and allowance of the pending claims as amended.

Respectfully submitted,
FITCH, EVEN, TABIN & FLANNERY
By 
James P. Krueger
Registration No. 35,234

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Date: _____

FITCH, EVEN, TABIN & FLANNERY
120 S. LaSalle St., Suite 1600
Chicago, Illinois 60603
Phone: 312/577-7000
Fax: 312/577-7007

Claims Showing Changes Made

1. (Once amended) A polymeric vehicle comprising an aqueous dispersion of a neutralized polymer in water, a co-solvent, and a [an isocyanate] cross-linking agent [comprising an isocyanate compound],

which dispersion is substantially free of emulsifiers,
wherein the cross-linking agent is selected from the group
consisting of dimerized or trimerized polyisocyanate,
triisocyanates, tetraisocyanates and mixtures thereof,

wherein the polymeric vehicle is effective for providing a coating binder film, wherein the polymer is selected from the group consisting of condensation polymers, addition polymer and hybrid polymers of condensation and addition polymers, wherein the polymer has an acid value of from about 4 to about 70 prior to neutralization, and a solubility of at least about 50 weight percent in a hydrophilic organic solvent which solvent has a solubility of at least 5 weight percent in water, and wherein the aqueous dispersion has less than about 2 weight percent organic solvent, at least about 30 weight percent solids, a viscosity of less than about 20 poise at a temperature of about 25°C., and a mean particle size of not more than about 300 nm.

6. (Once amended) A formulated coating composition comprising an aqueous dispersion of a neutralized polymer in water, a co-solvent, and a [an isocyanate] cross-linking agent [comprising an isocyanate compound],

which dispersion is substantially free of emulsifiers,
wherein the cross-linking agent is selected from the group
consisting of dimerized or trimerized polyisocyanate,
triisocyanates, tetraisocyanates and mixtures thereof,

the formulated coating composition being effective for providing a coating binder film, wherein the polymer is selected

from the group consisting of condensation polymers, addition polymer and hybrid polymers of condensation and addition polymers, wherein the polymer has an acid value of from about 4 to about 70 prior to neutralization, and a solubility of at least about 50 weight percent in a hydrophilic organic solvent which solvent has a solubility of at least 5 weight percent in water, and wherein the aqueous dispersion has less than about 2 weight percent organic solvent, at least about 30 weight percent solids, a viscosity of less than about 20 poise at a temperature of about 25°C., and a mean particle size of not more than about 300 nm.

23. (Once amended) A formulated coating composition comprising a first component and a second component, the first component comprising an aqueous dispersion of a neutralized polymer in water and a co-solvent, the second component comprising a [an isocyanate] cross-linking agent [which comprises an isocyanate compound],

which dispersion is substantially free of emulsifiers,
wherein the cross-linking agent is selected from the group
consisting of dimerized or trimerized polyisocyanate,
triisocyanates, tetraisocyanates and mixtures thereof,

the first and second component when mixed being effective for providing a coating binder film, wherein the polymer is selected from the group consisting of condensation polymers, addition polymer and hybrid polymers of condensation and addition polymers, wherein the polymer has an acid value of from about 4 to about 70 prior to neutralization, and a solubility of at least about 50 weight percent in a hydrophilic organic solvent which solvent has a solubility of at least 5 weight percent in water, and wherein the aqueous dispersion has less than about 2 weight percent organic solvent, at least about 30 weight percent solids, a viscosity of less than about 20 poise at a temperature of about 25°C., and a mean particle size of not more than about 300 nm.